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Cornelius Becker Philip
(1900–1987)

Cornelius ("Neil") Becker Philip, distinguished medical entomologist and world authority on Tabanidae, died at his home at Parkmerced, San Francisco, California, on the afternoon of January 8, 1987, at the age of 86, after an illness of several months duration.

Cornelius Philip, the first of four sons of Smith Durie Philip (1874–1970) and Mattie Newcomb Philip (née Shoemaker, 1876–1931), was born in Fort Lupton, Colorado, on June 12, 1900, on the family farm that his paternal grandfather, George Gilfillan Philip, had homesteaded upon his emigration from Scotland in the early 1870's. Attending public schools in Colorado, Idaho, and California, Philip was registered for his Sophomore to Senior years at Long Beach Polytechnic High School, in southern California, where he was also active on the basketball team. He was encouraged to study insects and natural history by his biology teacher. After graduation in 1918, Philip enlisted in the Student's Army Training Corps at the University of Nebraska. His first stay in the military lasted less than two months with his honorable discharge on December 15 as a Private, U.S. Army.

After receiving his Bachelor of Science degree from the University of Nebraska in 1923 (studying with Professors Ralph W. Dawson and Clarence E. Mickel), Philip commenced graduate studies at the University of Minnesota (studying with Professors William A. Riley and R. N. Chapman). In order to recoup finances, Philip moved to Bozeman, Montana in 1926, for a year's employment as Assistant Entomologist in the Experiment Station, Montana State College. Employment in the summer of 1927 with the Montana State Board of Health in mosquito control projects provided background experience with mosquitoes for his later assignment in Nigeria. Philip's first scientific publication "Diurnal Fluctuations in the Hydrogen Ion Activity of a Minnesota Lake" was published in *Ecology* in 1927, and it alerted readers to the fact that ecological classifications of "acid lakes" could depend on the time of day that readings were taken.

Prior to the completion of his doctorate, and beginning in March, 1928, Philip accepted a temporary appointment with the Rockefeller West African Yellow Fever Commission in Lagos, Nigeria, which was a hazardous assignment. Dr. Hideyo Noguchi died from yellow fever shortly after Philip's arrival, and a total of four of the 20 Americans assigned to Lagos died within 20 months from the disease or other causes. Before his departure from Lagos Dr. Ralph R. Parker cabled Philip to offer him a position as Medical Entomologist in the newly organized Spotted Fever Laboratory in Hamilton, Montana, to which Philip promptly accepted. He received his doctorate in 1930 and published his thesis "The Tabanidae (Horseflies) of Minnesota with Special Reference to Their Biologies and Taxonomy" in 1931.

Philip's original mission at the Laboratory was to study the mysterious differences in virulence of spotted fever rickettsiae on the west versus the east side of the Bitterroot Valley. In 1933, Philip was sent on special assignment to St. Louis to help in the fight to stem the ravages of encephalitis. In 1937, he undertook a parasitological reconnaissance to south-central Alaska and southwest Yukon Territory (Lake Bennett), and the suspected presence of *Francisella tularense* in Alaska was confirmed. In 1941, the first demonstration of the epizootic SLE virus in horses was published by

Fig. 1. Dr. Cornelius B. Philip at office window, Rocky Mountain Laboratory, Hamilton, Montana, March, 1970, looking south-southwest with the Como Peaks of the Bitterroot Mountains in the background.

C. B. Philip, H. R. Cox, and J. H. Fountain and also the experimental susceptibility of horses to this virus was published by H. R. Cox, C. B. Philip, and J. W. Kilpatrick.

With the entry of the United States into World War II, Philip joined the Sanitary Corps, U.S. Army, as a Major, and served from July, 1942, through September, 1946, with assignments in the American, European, and Southwest Pacific Theaters. After first participating in the training of medical officers at the Walter Reed Medical Center, Washington, D.C., Philip was assigned to the Jamaican Typhus Commission, which reported the first occurrence of murine typhus in Jamaica. In 1943, when assigned to the U.S. Army Neurotropic Virus Commission, headquartered in Cairo, with Major A. B. Sabin and Dr. J. R. Paul, Philip studied *Phlebotomus papatasi* (Scopoli), a local vector of sand fly fever. Also as part of this assignment *Phlebotomus* spp. were also studied in the Calcutta area of India and in northern Burma (at Myitkyina on the Lido Road). Transferring to the U.S.A. Typhus Commission in Italy in early December, 1943, Philip participated in the operation of the successful program of dusting the civilian population of Naples with the new insecticide DDT, dispensed with both power and hand dusters, and thus for the first time a potential typhus epidemic in civilian as well as military personnel was aborted under combat conditions.

Philip was then transferred to the Southwest Pacific Theater where he served in Australia, New Guinea, Owi Island, Admiralty Islands, Philippine Islands, and Japan. His assignment to a U.S.A. Typhus Commission team helped demonstrate several new foci of mite-borne typhus in parts of New Guinea, Owi Island, the Philip-

pines, and even beyond the classic areas within Japan. In August, 1945, Lieutenant Colonel Philip was presented the U.S.A. Typhus Commission Medal at a ceremony in Manila.

After the end of the war, Philip returned to the Rocky Mountain Laboratory to continue his studies of rickettsial diseases. In the following years he participated as a member or chairman of many national and international committees and congresses, presented lectures, and served as officer of various societies, including:

From 1946 through 1955, Associate Member of the Commission on Virus and Rickettsial Diseases, Army Service Forces, Army Epidemiological Board of the U.S. Army. In 1947, Secretary to both the International Northwestern Conference on Diseases in Nature Communicable to Man and the International Conference of Great Plains Entomologists. In 1948, presented the Theobald Smith Lecture at the New York Academy of Tropical Medicine. Also reactivated as Colonel to serve as member of the Scrub Typhus Unit, U.S. Army, in Malaya headed by Dr. Joseph E. Smadel, where in a short time the efficacy of chloromycetin® (Chloramphenicol) was demonstrated in the treatment of scrub typhus.

In 1950, presented the Invitational Public Address entitled "Tick Talk" to the 45th Entomological Society of America joint meeting with the American Association of Economic Entomologists, at Denver, Colorado. From 1950–1962, Assistant Director of the Rocky Mountain Laboratory, U.S. Public Health Service, Hamilton, Montana. From 1951–1961, Consultant to the Chemical Corps Biological Warfare Laboratory, Fort Detrick, Maryland. In 1952, President of the International Northwestern Conference on Diseases in Nature Communicable to Man. From 1952 to 1956, Consultant to the Air Forces Arctic Aeromedical Laboratory, Fairbanks, Alaska. In 1953, President of the American Society of Parasitologists. In 1955, Secretary to Section D, Medical and Veterinary Entomology, Entomological Society of America. From 1955 to 1970, Consultant to the U.S. Naval Medical Research Unit No. 3, in Cairo; researched under their auspices in Kenya in 1953 and in Ethiopia in 1963. From 1955 through 1970, Research Associate in the Department of Insects and Spiders, American Museum of Natural History, New York. In 1956, Chairman to Section D, Medical and Veterinary Entomology, Entomological Society of America. From 1958 to 1966, Member of the International Committee of Bacteriological Nomenclature. From 1959 to 1962, Member of the Board of Governors, Entomological Society of America. From 1959 to 1963, Member of the Interagency Advisory Committee, Dugway Proving Grounds, Utah. From 1959 to 1970, Member of the Expert Panel on Tickborne Diseases, Food and Agricultural Organization of the United Nations.

In 1960, Member and Delegate of the Entomological Society of America, XIth International Congress of Entomology, Vienna. From 1960 to 1969, Consultant to the Biological and Chemical Defense, Department of Defense. From 1962 to 1964, Director of the Rocky Mountain Laboratory, U.S. Public Health Service. In 1963, Co-chairman of the World Health Organization Conference on Rickettsioses, Geneva, July 8–13. From 1963 to 1966, Member of the Judicial Commission, International Committee of Bacteriological Nomenclature. In 1964, Member of the First International Congress of Parasitology, Rome, September 21–26. In 1964 and 1965, field work in Ecuador, Chile, and Argentinian-Bolivian border for Pan American Health Organization, two separate trips. In 1966, Chairman of the Third Expert Panel on Tick-borne Diseases of Livestock, Hamilton, Montana, August 8–15, and

Chairman of the Tsutsugamushi Disease Symposium, Eleventh Pacific Science Congress, Niigata, September 5.

Philip retired at age 70, on June 30, 1970, from the United States Public Health Service, Rocky Mountain Laboratory, after forty and one-half years of service. The Philips moved to San Francisco, California, and he began his second career, primarily dedicated to the study of the Tabanidae, with emphasis on the Mexican and Neotropical faunas, as a Research Associate in the Department of Entomology, California Academy of Sciences. In August Philip delivered the R. R. Parker Memorial Lecture at the 25th Annual Meeting of the International Northwestern Conference on Diseases in Nature Communicable to Man, at Pullman, Washington.

In 1971 Philip began the donation of his personal collection of Tabanidae to the California Academy of Sciences. The collection contained over 17,000 specimens including 124 holotypes, 87 allotypes and neallotypes, 976 paratypes, and 25 syntypes. More than 35 papers, mostly on Neotropical Tabanidae, were published during his retirement, and systematic studies were discontinued only when serious eye problems prevented his use of a binocular microscope. In spite of his diminishing eyesight Philip continued to type his own letters and drafts of manuscripts.

In 1974, Philip served as President of the Pacific Coast Entomological Society. He faithfully attended all meetings of this society during his residency in San Francisco and was always an active participant in the discussion period that followed the talks of the evening. Elected a Fellow of the California Academy of Sciences in 1972, he was always in attendance at the annual meetings and dinners of that fellowship.

In 1980 Philip was elected an Honorary Member of the American Society of Rickettsiologists and Rickettsial Diseases in recognition of his contributions to rickettsiology. Throughout the years he received many other honors that included: Fellow of the Entomological Society of America, in 1951; Honorary Doctor of Sciences degree from the University of Nebraska, in 1951; Outstanding Alumnus Achievement Award, from the Regents of the University of Minnesota, conferred June 4, 1960; Superior Service Award, Department of Health, Education, and Welfare, received May 28, 1966; and Honorary Life Member, International Northwestern Conference on Diseases in Nature Communicable to Man, in 1970.

Dr. Philip was also active in civic and fraternal organizations, especially in the years when he resided in Hamilton, Montana. These included the Elks (serving as Scholarship Chairman), the Lions Club, the American Legion (serving as Post Commander), Western Montana Association of Federal Business Men (President in 1957), and the Boy Scouts of America. He was fond of fishing and hunting and especially enjoyed the trout fishing along Girds Creek on the property of the Bitterroot Stock Farm founded by Marcus Daly. Philip also enjoyed elk and antelope hunting on a ranch in the central portion of Montana when permits could be obtained. A favorite retreat was Blue Nose Peak, at an elevation of 8,000 feet, on the Montana-Idaho divide about 80 miles south of Hamilton, where he held title to the use, for some years, to a deactivated Forest Service lookout cabin. This area that Philip looked forward to visiting with family and colleagues, which was especially productive for the collection of mountain topping Diptera such as male Tabanidae, *Cuterebra,* and the illusive *Cephenemyia,* he chose to be his final resting place.

During his career that spanned 60 years, Philip published 350 scientific articles with 3,595 pages of text and illustrations in parasitology and the biosystematics of Tabanidae, including the descriptions of 574 taxa (12 rickettsiae, 8 Acari, 2 Culi-

cidae, 2 Pelecorhynchidae, and 550 Tabanidae). He and coauthors proposed 18 genus-group names and 532 species-group names in the Tabanidae which constitute approximately 15% of the tabanid species recognized worldwide. Philip was generous in naming new taxa after his colleagues. One hundred twenty-seven individuals are included in the 156 patronymical names proposed.

Dr. Philip's many achievements have been documented by Jellison and Kohls (1973, Exp. Parasitol. 33:407–423), Collins (1976, J. Parasitol. 62:504–509), and in a Festschrift coedited by Arnaud and Lane (1985, Myia 3:1–714). In the Festschrift Lane and Arnaud provided bibliographies of Philip's parasitological and tabanidological publications, respectively, and the following five titles will complete Philip's bibliography:

1985

[From our Readers.] [Giardiasis.] Alaska Magazine 51(11):52.

[Abstract.] Tests in the field in western Montana of mechanical transmission of tularemia by biting flies between immobilized laboratory animals. Proc. Pac. Div., Amer. Assoc. Advanc. Sci. 4(1):38. [By Philip and W. L. Jellison.]

Tularemia and other problems in livestock induced by wood ticks in Montana. Bull. Soc. Vector Ecol. 10:45–47. [By Philip and S. C. Williams.]

1986

A collection of four species of tabanid flies taken from an anaconda snake in Peru in May 1984. Pan-Pac. Entomol. 62:63.

Field tests in western Montana of mechanical transmission of tularemia by biting flies (Diptera) between immobilized laboratory animals. Bull. Soc. Vector Ecol. 11:197–198. [By Philip and W. L. Jellison.]

Dr. Philip's extensive library of books and reprints on Tabanidae were donated to the Department of Entomology, California Academy of Sciences, by his family, while a bound set of seven volumes of Philip's publications was donated to the Academy by his son, Dr. Gordon W. Philip. The Philip correspondence files, pictures, and related materials are deposited in the California Academy of Sciences' Archives.

In 1922 Philip married Gladys Helen Hill who steadfastly supported his scientific endeavors for the next 64 years. He is survived by his wife Gladys, two daughters—Bonnie Dee Hasselbeck of Troy, Ohio, and Jo Joyce Dratz of Missoula, Montana, two sons—Dr. Robert N. Philip of Hamilton, Montana, and Dr. Gordon W. Philip of Silverdale, Washington, his brother George C. Philip of Denver, Colorado, 15 grandchildren, and six great-grandchildren. As quoted from a recent obituary written by Dr. Robert S. Lane: "He also leaves behind many colleagues and friends who benefited immeasurably from his constant encouragement and his generosity in sharing with them his time and broad knowledge. Moreover, Neil's keen sense of humor and his sage counsel will be missed sorely by all of us who were privileged to have known him." Dr. Philip requested that there be no funeral or memorial services.

Some taxa named in honor of Cornelius Becker Philip:

Arachnida: Acari: Ixodidae:

Amblyomma philipi Cooley and Kohls, 1939 (USA: Texas; Mexico).

Ixodes philipi Keirans and Kohls, 1970 (Japan).

Arachnida: Araneae: Salticidae:

Pellenes philipi Gertsch and Jellison, 1939 (USA: Montana).
Insecta: Diptera: Culicidae:
Culex (*Culex*) *philipi* Edwards, 1929 (Nigeria).
Insecta: Diptera: Tabanidae:
Philipomyia Olsufjev, 1964 (Palearctic).
Philipotabanus Fairchild, 1943 (Neotropical).
Anerythrops philipi Barretto, 1948 (Brazil).
Apatolestes philipi Pechuman, 1985 (USA: Texas).
Bolbodimyia philipi Stone, 1954 (Guatemala).
Chrysops philipi Burger, 1985 (Sarawak).
Cydistomyia philipi Burger, 1981 (Sri Lanka).
Haematopota philipi Chvála, 1969 (Nepal).
Hybomitra philipi (Stone, 1939, as *Tabanus*) (USA: Washington).
Leucotabanus cornelianus Fairchild, 1985 (Ecuador).
Lissimas philipi Mackerras, 1964 (New Guinea).
Silvius (*Zeuximyia*) *philipi* Pechuman, 1938 (USA: Oregon).

—Paul H. Arnaud, Jr., Department of Entomology, California Academy of Sciences, Golden Gate Park, San Francisco, California 94118.